

**OCCURRENCE OF POLLINATOR BEES IN LEH: LADAKH
(JAMMU & KASHMIR) AT 3430 METRES (11,200 FEET)
ALTITUDE IN INDIA**

MOHOMMAD ARIF AND NARENDRA KUMAR

Defence Agricultural Research Laboratory, Pithorogarh, 262501, India

OUT OF 19,000 species of wild bee in the world (Linsley, 1958) only two, the leaf-cutting bee *Megachile rotunda* Fabr. (Bohrat, 1972; Johanson & Mayer, 1976) and the Alkali Bee *Nomia melanderi* Cockerell (Johanson & Eves, 1973) are manipulated and used in crop pollination.

During the survey and collection of insects at high altitude in the north-west Himalayas, two hymenopterous insects, *Andrena peregrina* Smith (Andrenidae) and a *Colletes* species (Colletidae) were collected from flowers of mustard, lai, radish, turnip, knol-khol, carrot and onion in the Leh: Ladakh region, Jammu & Kashmir, at 3430 metres (11,200 feet) altitude from the last week of July to mid-August during 1992. The population of *A. peregrina* dominated in all crop types, in comparison with the unknown *Colletes*. However, the average population of *A. peregrina* on each crop was low, with a high of ten on mustard followed by eight on carrots (Table 1).

The pollen collected by *A. peregrina* and held in the pollen-baskets on the hind tibiae appeared as a yellowish-white ball approximately 4mm in diameter. The bees in the present study were observed actively pollinating the crops in these high altitude areas. Rashad and Moneim (1983) have reported two species, *Andrena savignii* and *A. fucosa* pollinating a broad bean crop in Egypt and Kapil and Jain (1983) list *A. ilerda*, *A. leana*, *A. carantonica* and *A. candida* on a variety of different vegetable crops and in

Table 1: Populations of *Andrena peregrina* and the unknown *Colletes* species on different crops in Leh: Ladakh, India in 1992

Crop	Numbers of bees per plant recorded	
	<i>Andrena peregrina</i>	<i>Colletes</i> sp.
Mustard <i>Brassica campestris</i> L.	10	3
Lai <i>B. juncea</i> L.	3	1
Radish <i>Raphanus sativus</i> L.	4	2
Turnip <i>B. rapa</i> L.	5	3
Knol-khol <i>B. oleracea</i> var. <i>gongylodes</i>	4	3
Carrot <i>Daucus carota</i> L.	8	4
Onion <i>Allium cepa</i> L.	6	3

orchards. From the available literature, this present report of *A. peregrina* appears to be the first from Leh: Ladakh since it was collected at Yangihissar on the second Yarkand Mission (Donald Baker, *pers. comm.*).

Acknowledgements

The authors are grateful to Dr Donald B. Baker, Hope Department Entomological Collections, Oxford University Museum and Director of the International Institute of Entomology, London, for the identification of insect specimens.

References

- Bohart, G.E., 1972. *Annual Review of Entomology* **17**: 287.
Johanson, C. & Eves, I.D., 1973. *Washington Agric. Ext. Serv.* **EM 3535**: 7
Johnson, C. & Mayer, D., 1976. *Pacific North West Ext. Pub.* **155**: 19.
Linsley, E.G., 1958. *Hilgardia*, 593 - 599.
Kapil, R.P. & Jain, K.L., 1977. Role of solitary bees in promotion of agricultural production. *Second International Conference on Apiculture in Tropical Climates*. ICAR, New Delhi, pp. 557 - 579.
Rashad, E.S. & Moneim, E.A., 1983. Some notes on the biology and behaviours of the wild bee *Megachile patelimana* Spin. in the New Valley, Egypt. *Second International Conference on Apiculture in Tropical Climates*. ICAR, New Delhi, pp. 310 - 319.

Hazards of butterfly collecting – Christian Cat goes camping, Botswana 1991

It was to be our joint swan-song expedition in Botswana, to the Tswapong Hills, one of the finest collecting spots in the country. There are probably at least 125 butterfly species in the area – not much by rainforest standards, but a lot by the semi-desert conditions of Botswana (1992, Butterfly collecting in the Tswapong Hills, Botswana. *Metamorphosis* **3**: 18-20). The well-wooded hills are very beautiful, and no-one else is around.

We loaded up the Toyota Hilux at dawn. There is no need to travel light if you do not have to, and Nancy likes a few creature comforts when camping. I think I have previously mentioned that we carry chopsticks on camping trips – just in case we get the fancy for crab with straw-mushrooms and glass noodles. We also carry a wok.

As usual our cat, Christian – the only survivor of Christian, Frederick and Margrethe, named after the Danish royal lineage – participated enthusiastically in the preparations. He loved poking about the car. He hated driving in it, though. Once, when taking him to the vet, he escaped through a slit in the window that seemed too narrow for a spider. We got him back only four hours later after distributing a generous amount of Pula notes to all the kids in the neighbourhood. He was found hiding deep under a pile of bricks at a building site. It took a long time to coax him out, and several additional Pula to the finder.